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MEMORANDUM

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TO: Economic Opportunity and Poverty Reduction Task Force

FROM: Keshia Duncan, Economist, 303-866-6289

SUBJECT: Measures of Poverty

Summary

While only the federal poverty level (FPL) is known as the official poverty measure, a number of other poverty measures exist. The National Academy of Sciences (NAS) measure and Self-Sufficiency Standard are two such measures, each seeking to provide a more adequate and regionally specific measure of the basic needs of individuals and families. The FPL, NAS measure, and Self-Sufficiency Standard each differ in the assumptions, data sources, and calculations employed to measure a threshold that identifies those living in poverty (unable to meet their basic needs) and those living above poverty. Because of these differences, all three measures identify different populations as living in poverty.

This memorandum provides information and a comparison of the use and calculation of three measures of poverty: (1) the federal poverty level, also known as the official poverty measure; (2) the NAS poverty measure; and (3) the Self-Sufficiency Standard. Attached to this memorandum is additional material on these measures, including:

- the executive summary of the 2011 report on the Self-Sufficiency Standard for Colorado;
- the summary and recommendations of the National Academy of Sciences 1995 report titled *Measuring Poverty: A New Approach*;
- Appendix A, consisting of a table summarizing the differences between measures; and
- Appendix B, consisting of the FPL guidelines from 1982 to 2013.

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Comparing Poverty Measures

Each of the three poverty measures discussed in this memorandum differ in how they define and measure poverty. As a result, the population considered living in poverty differs depending on the measure employed.

How is poverty measured? The Self-Sufficiency Standard aims to measure the amount families need to make in wages to be self-sufficient or to meet their basic needs without public or private assistance.¹ In contrast, both the NAS and FPL aim to measure the number of persons living in poverty. A poverty threshold or poverty line is a minimum income level under which individuals are unable to meet their basic needs for survival or participation in society. Both the NAS and FPL measures are used to calculate a poverty rate, or the percentage of individuals living in poverty relative to the general population. The following two equations summarize the relationship between the poverty threshold, family resources (money and near-money income), and the poverty rate for the NAS and FPL measures.

Individuals living in poverty = Individuals whose resources fall below the poverty income level

Poverty rate = Individuals living in poverty / total population

Differences in definitions of basic needs and family resources. Each of the three measures identify a threshold of basic needs. Each measure also defines the resources a family needs for obtaining basic necessities. Table 1 summarizes differences in definitions of basic needs and family resources between poverty measures.

Table 1
Comparing Measures: Definitions of Basic Need and Family Resources

Poverty Measure	Basic Needs Threshold	Resources for Obtaining Basic Needs
FPL	<i>Poverty threshold (or poverty line):</i> Annual cost of food in 1955 multiplied by three, adjusted by inflation each year	<i>Money income before taxes</i>
NAS Poverty Measure	<i>Poverty threshold (or poverty line):</i> Cost of food, clothing, shelter, utilities, medical care costs*, and miscellaneous needs	<i>Disposable income:</i> After-tax money income plus specific tax credits, plus near-cash value of assistance programs (such as food stamps), minus work-related expenses (such as child care and transportation)
Self-Sufficiency Standard	<i>Self-Sufficiency Standard:</i> Cost of food, housing, transportation, child care, health care, and miscellaneous necessities, taxes and tax credits, and adjustments in cost based on participation in assistance programs	<i>Self-Sufficiency Wage:</i> Total family wages

*Medical costs were originally excluded but have been included in the calculation of the measure in other studies.

Who is living in poverty? Populations considered to be living in poverty differ based on differences in how poverty is measured. The FPL, NAS measure, and Self-Sufficiency Standard each identify different thresholds for basic needs as well as family resources for obtaining those needs and, as a result, each also identify different groups of people living in poverty. Table 2 summarizes the basic needs thresholds for each measure for Colorado. The NAS poverty

¹Pearce, Diana. "The Self-Sufficiency Standard for Colorado 2011" Fiscal Policy Institute, October 2011.

threshold is 8.1 percent greater than the FPL in 2011. While the Self-Sufficiency Standard does not have a poverty threshold, it does have a threshold distinguishing those requiring public or private assistance and those who are self-sufficient. The continuum is not calculated statewide, therefore the county ranges for the measure as well as county average is shown for the year 2011. Differences in child care, housing, and tax costs account for the majority of differences between counties.

Table 2
Colorado Basic Needs Thresholds
(Family of Two Adults and Two Children)

FPL, 2011*	NAS Measure Threshold, 2011**	Self-Sufficiency Standard, 2011***
\$22,350	\$24,170	Low: \$38,224 (Kit Carson County) High: \$72,408 (Pitkin County) 64 County Average: \$52,088

* U.S. Census Bureau.

** Legislative Council Staff calculations.

*** Diana Pierce (2011); Self-Sufficiency Standard for a family with two adults, one pre-schooler, one school age child.

Official Poverty Measure/FPL

Origin and use. The federal poverty level was developed in the early 1960s by statistician Mollie Orshansky as an indicator of the number of people with inadequate income to cover the costs of a minimum food diet and other necessities. Official poverty thresholds are updated each year by the Census Bureau. The thresholds are used mainly for statistical purposes, such as preparing estimates of the number of Americans in poverty each year or the poverty rate.

The FPL takes the Census Bureau information and simplifies it to determine financial eligibility for certain federal programs, such as Head Start, the National School Lunch Program, and the Children's Health Insurance Program. Other programs such as the Low-Income Home Energy Assistance Program (LEAP) use the guidelines for the purpose of giving priority to lower-income persons or families in the provision of assistance or services. Attached in Appendix B are the FPL guidelines from 1982 through 2013.

Calculating the FPL. The FPL is based on the share of a household's budget that is spent on food. The share was calculated using data from the 1955 Household Food Consumption Survey. Based on the survey, annual food spending was calculated as approximately one third of spending on necessities. Therefore, the poverty threshold was set at the annual cost of food multiplied by three. Each year the threshold is grown by inflation as measured by the national consumer price index for all urban areas (CPI-U). The following equations summarize the threshold for the official poverty measure:

Original threshold = 3 × Annual cost of food prepared at home based on a 1955 survey

Official poverty threshold = Original threshold increased annually by inflation

Original thresholds were calculated for individuals and families differently based on the number of members in a family and age of individuals. Thresholds differ for children, adults, and the elderly. All states within the contiguous United States have the same poverty threshold each year. Changes in the standard of living are not accounted for in the measure. Instead, the measure is reflective of living standards from the 1950s. Therefore, inflation adjustments account for the change in cost of the standard of living from this time period. Government assistance programs, such as food stamps and housing assistance are not included when calculating if a family's resources exceed the official poverty measure. When a person or family's resources as measured by their money income before taxes is less than the threshold, they are considered living in poverty. According to the Census Bureau, the 2011 poverty rate for individuals and families in the state of Colorado is 12.5 and 8.7 percent, respectively, compared to national rates of 14.3 and 10.5 percent.²

National Academy of Sciences (NAS) Poverty Measure

Origins and use. At the request of Congress, the National Academy of Sciences (NAS)³ created the Panel on Poverty and Family Assistance in 1992 to conduct a comprehensive examination of poverty measurement in the United States. The panel published their findings in a 1995 report titled *Measuring Poverty: A New Approach*. The summary and recommendations of this report are attached to this memorandum. The report recommends the revision of the official poverty measure to reflect the circumstances (basic needs and family resources) of families over time and outlines a method for calculating the measure.

Since the report was published in 1995, the recommendations of the report have not been adopted nationwide, though legislation has been introduced to do so. In 2009, the Office of Management and Budget formed an Interagency Technical Working Group to develop a supplemental poverty measure. The working group, led by the U.S. Census Bureau and Bureau of Labor Statistics, founded the Supplemental Poverty Measure which calculates poverty similar to some of the guidelines suggested in the NAS measure. This new measure has not been officially adopted and is designed to be used as an informational tool. Additionally, in 2006 New York City Mayor Michael Bloomberg convened a Commission to study poverty measurement in New York City. Finding inadequacies in the official poverty measure, Mayor Bloomberg created the New York City Center for Economic Opportunity which adopted a poverty measure based on the NAS methodology.

Calculating the NAS measure. The public and scientific community continue to shape how the NAS measure is calculated. Based on recent publications and the 1995 NAS report, the NAS threshold is first calculated for a reference family of four (two adults, two children) then later adjusted for differences in family type (number of adults and children). Basic needs for the reference family are calculated as the percentage of national median expenditures on food, clothing, shelter, utilities, and miscellaneous necessities. Medical costs were excluded from the original 1995 report, but have since been included in the calculation in other studies.⁴ Regional differences are adjusted based on differences in housing rental costs. The NAS panel recommended that the measure be calculated annually to account for changes in consumer prices and living standards.

²U.S. Census Bureau, American Community Survey five-year estimates (2007 to 2011).

³The National Academy of Sciences (NAS) is a private, non-profit corporation composed of distinguished scholars who engage in scientific research at the request of Congress.

⁴Garner and Short. "Creating a Consistent Poverty Measure over Time Using NAS Procedures: 1996-2005." U.S. Bureau of Labor Statistics Working Paper No. 417, April 2008.

Family resources are defined as after-tax money income and near-money income from assistance programs, including food stamps and housing assistance. Additionally, specific tax credits are added to income and work-related expenses, including transportation and child care costs, are subtracted. If family resources are less than the basic needs threshold, a family is considered to be living in poverty.

While no formal NAS measure has been calculated for Colorado, Legislative Council Staff (LCS) calculated estimates of the NAS threshold for the year 2011 using the NAS methodology. These estimates are summarized in Table 3, comparing the LCS estimates for Colorado to the threshold for the United States. The Colorado threshold is 6 percent larger than the nationwide threshold, reflecting higher rental prices in Colorado than the nation. Due to data limitations, an estimate of the Colorado poverty rate using the NAS measure cannot be calculated at this time.

Table 3
NAS Poverty Measure Threshold for Colorado and the United States, 2011
(Family of Two Adults and Two Children)

	Colorado	United States
Shelter and Utilities	\$11,396	\$10,037
Non-Shelter Necessities	\$12,774	\$12,774
Poverty Threshold	\$24,170	\$22,811

Source: U.S. Census Bureau and Legislative Council Staff calculations.

Calculating the Supplemental Poverty Measure (SPM). The SPM, which is largely based on the suggestions from the NAS, is defined by the Interagency Technical Working Group as an internally consistent poverty measure that is based on spending outflows and money inflows⁵. It is considered an informational tool and is not a replacement for the FPL. The SPM measures all related individuals who live at the same address, including co-resident unrelated children, co-habitors, and relatives. The threshold is the 33rd percentile of expenditures on food, clothing, shelter, and utilities for families with exactly two children multiplied by 1.2. Adjustments are made for geographic differences in housing costs and updates are on a five year moving average of expenditures. Family resources are defined as the sum of cash income, plus federal benefits, minus taxes, work expenses, out-of-pocket medical expenses, and child support paid to another household. In 2011, the national official poverty rate was 15.1 percent, while the SPM was 16.1 percent.

The Self-Sufficiency Standard

Origins and use. The Self-Sufficiency Standard defines the income families require in order to meet their basic necessities without public or private assistance. The standard was first developed by Dr. Diana Pearce for Wider Opportunities for Women in response to the perceived inadequacies of the FPL in 1996. Dr. Pearce continues to calculate the standard for numerous states each year. The standard was calculated for Colorado for the Fiscal Policy Institute in 2001, 2004, 2008, and 2011. Attached to this memorandum is the executive summary of the 2011 Self-Sufficiency Standard report.

⁵Short. "The Research Supplemental Poverty Measure: 2011" U.S. Department of Commerce Economics and Statistics Administration Working Paper P60-244, November 2012.

Calculating the Self-Sufficiency Standard. The standard is calculated for 152 different family types in each of Colorado's counties. Family types differ based on the number of adults, number of children, and age of children in a family. Based on the family type, monthly costs of basic necessities are calculated by category (e.g., food, housing, transportation) based on available data and are adjusted based on regional costs and benefits from assistance programs such as food stamps and federally assisted housing. Taxes and specific tax credits are also included in the standard. The total of all costs for each category is equal to the "Self-Sufficiency Wage", and represents the total household wage necessary for a family to be self-sufficient. Table 4 below provides the 2011 Self-Sufficiency Standard for two family types in Larimer County.

Table 4
2011 Self-Sufficiency Standard for Selected Family Types: Larimer County

	One Adult, One Preschooler		Two Adults, One Preschooler, One School Age Child	
Monthly Costs	Costs	% of Total Costs	Costs	% of Total Costs
Housing	\$849	24	\$849	18
Child Care	\$961	27	\$1,410	29
Food	\$351	10	\$723	15
Transportation	\$243	7	\$462	10
Health Care	\$348	10	\$426	9
Miscellaneous	\$275	8	\$387	8
Taxes	\$676	19	\$861	17
Earned Income Tax Credit	\$0	0	\$0	0
Child Care Tax Credit	(\$53)	-2	(\$100)	-2
Child Tax Credit	(\$83)	-3	(\$167)	-4
Total	\$3,567	100	\$4,851	100
Self-Sufficiency Wage				
Hourly	\$20.27		\$13.79 (per adult)*	
Monthly	\$3,567		\$4,853	
Annual	\$42,803		\$58,232	

**Hourly wages for families with multiple adults represent the hourly wage that each adult would need to earn, while the monthly and annual wages represent all adults' wages combined.*

Source: Pearce (2011).

Appendix A

Comparison of Three Measures of Poverty

	Official Poverty Measure (FPL)	NAS Poverty Measure	Self-Sufficiency Standard
What is measured?	Number of individuals and families living in poverty	Number of individuals and families living in poverty	Amount families need to make in wages to meet their basic necessities without public or private assistance
How is the measure used?	Determining poverty status, used for statistical purposes, determining eligibility for assistance programs	Determining poverty status, used for statistical purposes, determining eligibility for assistance programs	Tool for policy analysis, counseling, performance evaluation, and research
Definitions			
Basic needs	Annual cost of food from a 1955 survey multiplied by three	Cost of food, clothing, shelter, utilities, and miscellaneous needs; medical costs may or may not be included	Cost of food, housing, transportation, child care, health care, and miscellaneous necessities, taxes and tax credits, and adjustments in costs based on participation in assistance programs
Family resources	Money income before taxes	Disposable income: After-tax money income plus specific tax credits, plus near-cash value of assistance programs (such as food stamps), minus work-related expenses (such as child care and transportation)	Family wages
Adjustments			
Reference group	Individuals and families based on the size and number of children and elderly	Individuals and families based on the size and number of children	Individuals and families based on the number of adults and children and children's ages
Regional	None. The 48 contiguous states in the U.S. have the same poverty threshold	Adjusted based on regional differences in housing rental costs	Calculated separately for each county
Inflation	Adjusted for inflation each year	Calculated annually and adjusted for inflation	Reflects the purchasing power of dollars for the years it is calculated
Standard of living	None. The measure is reflective of living standards in the 1950s	Calculated annually to account for changes in living standards	Reflects the standard of living for years it is calculated
Metrics			
How is the measure reported?	Poverty threshold, rate, and number of individuals and families living in poverty	Poverty threshold, rate, and number of individuals and families living in poverty	Self-Sufficiency Standard tables for 70 family types for each county

**Appendix B: Federal Poverty Guidelines
for the 48 Contiguous States and the District of Columbia**

Year	First Person	Each Additional	Four-Person
2013	\$11,490	\$4,020	\$23,550
2012	\$11,170	\$3,960	\$23,050
2011	\$10,890	\$3,820	\$22,350
2010*	\$10,830	\$3,740	\$22,050
2009	\$10,830	\$3,740	\$22,050
2008	\$10,400	\$3,600	\$21,200
2007	\$10,210	\$3,480	\$20,650
2006	\$9,800	\$3,400	\$20,000
2005	\$9,570	\$3,260	\$19,350
2004	\$9,310	\$3,180	\$18,850
2003	\$8,980	\$3,140	\$18,400
2002	\$8,860	\$3,080	\$18,100
2001	\$8,590	\$3,020	\$17,650
2000	\$8,350	\$2,900	\$17,050
1999	\$8,240	\$2,820	\$16,700
1998	\$8,050	\$2,800	\$16,450
1997	\$7,890	\$2,720	\$16,050
1996	\$7,740	\$2,620	\$15,600
1995	\$7,470	\$2,560	\$15,150
1994	\$7,360	\$2,480	\$14,800
1993	\$6,970	\$2,460	\$14,350
1992	\$6,810	\$2,380	\$13,950
1991	\$6,620	\$2,260	\$13,400
1990	\$6,280	\$2,140	\$12,700
1989	\$5,980	\$2,040	\$12,100
1988	\$5,770	\$1,960	\$11,650
1987	\$5,500	\$1,900	\$11,200
1986	\$5,360	\$1,880	\$11,000
1985	\$5,250	\$1,800	\$10,650
1984	\$4,980	\$1,740	\$10,200
1983	\$4,860	\$1,680	\$9,900
1982	\$4,680	\$1,540	\$9,300

Source: U.S. Department of Health and Human Services.

*Legislation enacted in late 2009 and early 2010 prohibited publication of 2010 poverty guidelines before May 31, 2010, and required that the 2009 poverty guidelines remain in effect until publication of updated guidelines. Legislation to further delay publication of the 2010 guidelines did not pass. The procedure for updating the 2010 guidelines was modified to take into account the Consumer Price Index (CPI-U) for the period for which their publication was delayed. As a result, the poverty guideline figures for the remainder of 2010 were the same as the 2009 poverty guideline figures.